

REMARKS

Enclosed herewith is a Substitute Specification in which the specification as filed has been amended in various places to correct typographical and grammatical errors, and to also add section headings.

In support of the above, enclosed herewith is a copy of the specification as filed marked up with the above changes.

The undersigned attorney asserts that no new matter has been incorporated into the Substitute Specification.

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, the claims have been amended for clarity. Applicant asserts that the above changes are editorial in nature only and do not affect the scope of the claims.

The Examiner has rejected claims 1, 2, 4, 5, 7 and 8 (and apparently claims 9 and 10) under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,118,336 to Pullen et al. The Examiner has further rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Pullen et al. in view of U.S. Patent 6,441,685 to MacMillan. In addition, the Examiner has rejected claim 6 under 35 U.S.C. 103(a) as being unpatentable over Pullen et al. in view of U.S. Patent 5,955,899 to Afghahi.

The Pullen et al. patent discloses a start-up circuit for self oscillating class D modulator, which includes a power

amplifier, switching means, filter means, input means and a control circuit.

The subject invention concerns a power amplifier having switching means, filter means, input means and a control circuit.

As per MPEP § 2131, "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051,1053 (Fed.Cir.1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed.Cir.1989).

The Examiner has indicated that the claim 1 limitation "the control circuit is connected between the power output signal and a linear input of the input means for controlling both the gain in the operational frequency range and also said alternately switching of the switching means" is taught by Pullen et al., referencing col. 2, lines 33-36.

Applicant submits that the Examiner is mistaken. In particular, Pullen et al. shows the power output signal, as applied to the speaker, being fed back via resistor RFBA to the '-' input of amplifier 13. However, there is no disclosure that this input is a "linear" input. Further, there is no disclosure in Pullen et al. as to what is being controlled by this feedback. While Pullen et

al. also shows a feedback resistor RFBD also connected to the '-' input of the amplifier 13, this resistor RFBD is connected to receive the PWM switched voltages at the output of the switching means, and not the power output signal. While Pullen et al. states, at col. 4, lines 41-43, "The frequency of this oscillation is determined by the integrating capacitor 302, RFBD, B+, B-, and the comparator trip voltages", this does not satisfy the claim 1 limitation "the control circuit is connected between the power output signal and a linear input of the input means for controlling both the gain in the operational frequency range and also said alternately switching of the switching means".

The Examiner further states that the claim 1 limitation "said linear input being substantially free of hysteresis" is taught by Pullen et al.

Applicant submits that the Examiner is mistaken. In particular, Pullen et al. makes no mention of "hysteresis" with regard to the '-' input of the amplifier 13. The only mention of the term "hysteresis" is with regard to the resistors 401 and 402 connected to the output and the '-' input of the amplifier 14.

The Examiner further states that the claim 2 limitation "wherein the control circuit only has a voltage feedback from the power output signal" is taught by Pullen et al. referencing the two feedback resistors.

Applicant again submits that the Examiner is mistaken. In particular, since the "control circuit" of Pullen et al. receives a feedback signal from the output of switching MOSFET's 42 and 44, as well as a feedback signal from the connection to the loudspeaker, clearly, the control circuit DOES NOT "only has a voltage feedback from the power output signal".

The Examiner further states that the claim 10 limitation "said linear input being substantially free of hysteresis" is disclosed in Pullen et al., and states "note: the comparators are designed with small hysteresis as mentioned in col. 3, lines 31-33".

Again, Applicant submits that the Examiner is mistaken. In particular, the Examiner is taking the cited portion of Pullen et al. out of context. The cited portion of Pullen et al. is referring to the comparators 22 and 23 shown in Fig. 2(b) which are a part of a start-up circuit for the power amplifier of Fig. 1(a) and supply the signals MUTE and ENABLE thereto. However, there is no disclosure or suggestion relating to hysteresis for the amplifier 13 of Fig. 1 which is identified by the Examiner as being the "input means".

The MacMillan patent discloses an amplifier circuit and method for providing negative feedback thereto, in which a first feedback path, including an attenuating resistive voltage divider 401, a shunting filter capacitor 407, a buffer amplifier 403 and

high-pass filter 313 (including the series arrangement of a resistor 416 and a capacitor 415), is connected between the output of the switching means 423/424 and the '-' input of error amplifier 301 (regarded by the Examiner as the claimed input circuit), and a second feedback path, including the serial arrangement of an attenuating resistive voltage divider 402, a buffer amplifier 404, a feedback low-pass filter 311 (including a series resistor 419 and a shunting capacitor 420), a second buffer amplifier 405 and a serial resistor 409, is connected between the output of the power amplifier (as connected to the loudspeaker) and the '-' input of error amplifier 301.

The Examiner now states that the claim 3 limitation "wherein the control circuit comprises a first element, in the form of a resistor, for controlling said gain and a second element, in the form of a capacitance in series with a resistor, for controlling said alternately switching" is disclosed in MacMillan "...and a control circuit (313) comprising a first element, in particular a resistor (416), for controlling said gain and a second element, in particular a capacitance (415) in series with a resistor, for controlling said alternating switching."

Firstly, Applicant submits that circuit 313 is not a control circuit, but rather, a high-pass filter as particularly indicated by MacMillan at col. 5, lines 27-28. Further, claim 3 clearly depends from claim 2 which clearly states "the control

circuit only has a voltage feedback from the power output signal". Applicant submits that the feedback path of MacMillan including the circuit 313 is not connected to the power output signal (as connected to the loudspeaker 309).

Further, Applicant submits that MacMillan does not supply that which is missing from Pullen et al., i.e., "the control circuit is connected between the power output signal and a linear input of the input means for controlling both the gain in the operational frequency range and also said alternately switching of the switching means" and "said linear input being substantially free of hysteresis".

The Afghahi patent discloses a compact comparator which arguably includes a difference amplifier and a switching current mirror providing said complementary current outputs.


However, Applicant submits that Afghahi does not supply that which is missing from Pullen et al., i.e., "the control circuit is connected between the power output signal and a linear input of the input means for controlling both the gain in the operational frequency range and also said alternately switching of the switching means" and "said linear input being substantially free of hysteresis".

In view of the above, Applicant believes that the subject invention, as claimed, is neither anticipated nor rendered obvious

by the prior art, either individually or collectively, and as such,
is patentable thereover.

Applicant believes that this application, containing
claims 1-10, is now in condition for allowance and such action is
respectfully requested.

Respectfully submitted,

by 
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